Confidence Interval Class Activity

Source: Gallup website. Consider this description of the first survey we will consider:

Survey Methods:

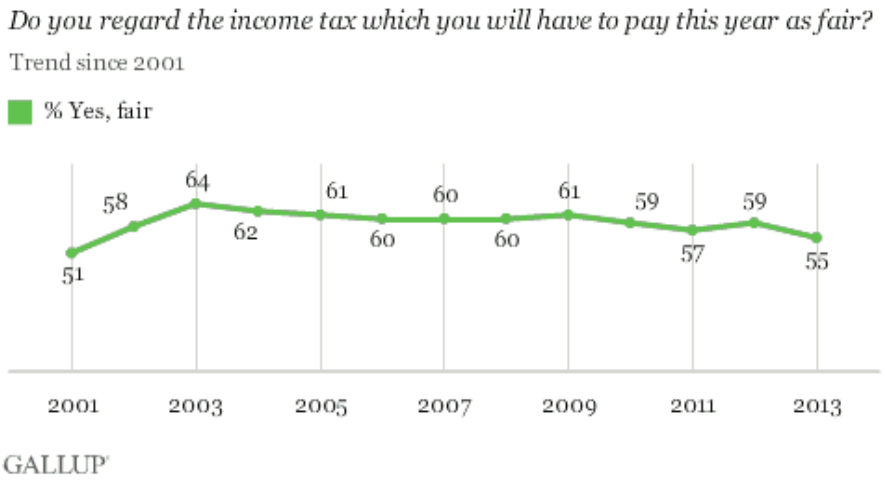
Results for this Gallup poll are based on telephone interviews conducted April 4-7, 2013, with a random sample of 1,005 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia.

For results based on the total sample of national adults, one can say with 95% confidence that the margin of sampling error is ±4 percentage points.

Interviews are conducted with respondents on landline telephones and cellular phones, with interviews conducted in Spanish for respondents who are primarily Spanish-speaking. Each sample of national adults includes a minimum quota of 50% cellphone respondents and 50% landline respondents, with additional minimum quotas by region. Landline telephone numbers are chosen at random among listed telephone numbers. Cellphone numbers are selected using random digit dial methods. Landline respondents are chosen at random within each household on the basis of which member had the most recent birthday.

Survey Results:

PRINCETON, NJ -- This Tax Day, 55% of Americans regard the income taxes they have to pay as fair, the lowest percentage Gallup has measured since 2001.



The results are based on Gallup's Economy and Personal Finance poll, conducted April 4-7, and annually since 2001. The recent high in Americans' perceptions that their taxes were fair, 64%, came in 2003, after President Bush signed tax cuts into law and weeks after the Iraq war began.

Discuss these questions about the survey methods as a class. Write up answers in complete sentences.

1. Discuss their survey methods as a class. Is this a representative sample? What population are they considering? Which of the efforts described here are the most important?

2. Given the reported sample size, roughly what should the margin of error be for 95% confidence (according to our text)? Round your answer as a percentage to 1 decimal place.

3. The article claims a margin of error of ± 4 percentage points. Given your answer to question 2 above, is this reasonable? Why or why not?

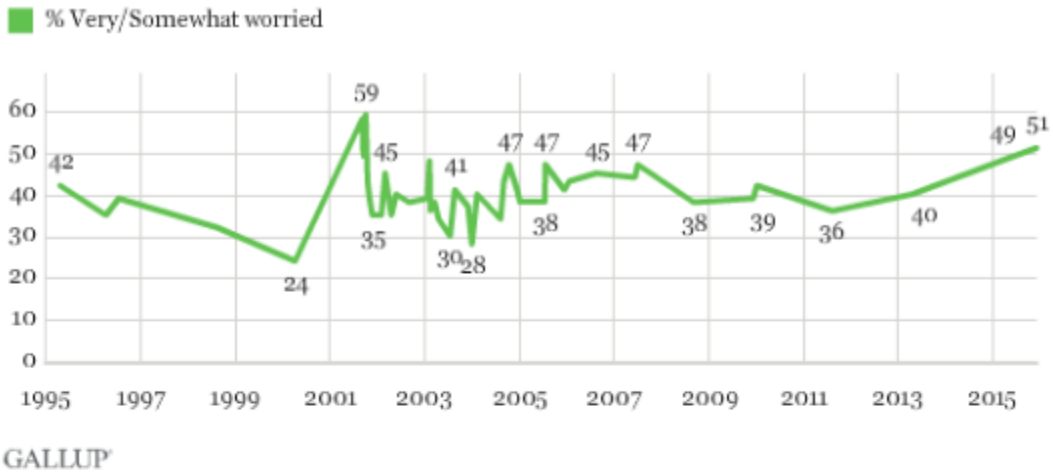
Work as a class on these questions about the stated survey results. Write up your answers in complete sentences.

4. The article states that in 2013, 55% of Americans regarded their income taxes as fair. Use this result from the article together with the stated margin of error to build a 95% confidence interval.

5. Explain the meaning of this confidence interval in plain English, putting it in context.

6. Discuss the graph. What could be done to make it more clear?

Now consider another posting from the Gallup website:



GALLUP

How worried are you that you or someone in your family will become a victim of terrorism -- very worried, somewhat worried, not too worried, or not worried at all?

	Very worried	Somewhat worried	Not too worried	Not worried at all	Know a victim (vol.)	No opinion
	%	%	%	%	%	%
2015 Dec 8-9	19	32	28	20	--	1
2015 Jun 2-7	15	34	25	24	--	2
2013 Apr 24-25	11	29	33	27	--	*
2011 Aug 11-14	9	27	32	31	*	*
2010 Jan 8-10	9	33	35	22	*	1

Shown above is a graph over a 10-year period and a table of results for 2015-2010. Answer the following question in groups. Express your answers in complete sentences.

7. Suppose this was a survey of 1175 randomly selected adults in the United States. According to the text, what is the approximate margin of error at a confidence level of 95%? Round your answer as a percentage to one decimal place.

8. Use your answer to question 7 to build a 95% confidence interval for the percentage of Americans in December of 2015 who were very worried about terrorism. (see the top line of the table.)

9. Explain the meaning of your confidence interval in plain English, putting it in context.

10. Look carefully at the graph. How did they arrive at the numbers displayed around the line?

11. What could be done to make the graph/data more clear?

12. Suppose you wanted a margin of error of ± 2 percentage points. According to the text, approximately what sample size would be needed for 95% confidence? (Use the same formula as in question 7, but you will know the margin of error and solve for the sample size.) Round your answer to the nearest whole number.